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## PATENT COOPERATION TREATY

8th F1. Songchon Bldg., 642-15, Yoksam-dong, Kangnam-gu Seoul 135-080 Republic of Korea     Date of mailing (day/month/year)   28 OCTOBER 2005 (28.10.2005)	NTERNATIONAL SEA	RCHING AUTH	IORITY							
Seoul 135-080 Republic of Korea    Date of mailing   Cday/month/year   28 OCTOBER 2005 (28.10.2005)	То:					PCT				
Date of mailing   (day/month/year)   28 OCTOBER 2005 (28.10.2005)	HAW, Yong-Noke					101				
Date of mailing   (day/manth/year)   28 OCTOBER 2005 (28.10.2005)	8th F1. Songchon Bldg., 642-15, Yoksam-dong, Kangnam-gu Seoul 135-080 Republic of Korea			ngnam-gu	WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY					
Applicant's or agent's file reference FLGE-POS-020  International application No. PCT/KR2005/002368  International application No. PCT/KR2005/002368  International paper of the priority date (day/month/year) Priority date(day/month/year) International application No. PCT/KR2005/002368  International Patent Classification (IPC) or both national classification and IPC IPC7 H01L 33/00  Applicant  LG INNOTEK CO., LTD et al  I. This opinion contains indications relating to the following items: Box No. I Basis of the opinion Box No. II Priority Box No. II Non-establishment of opinion with regard to novelty, inventive step and industrial applicability Box No. V Lack of unity of invention Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability: citations and explanations supporting such statement Box No. VI Certain defects in the international application Box No. VII Certain defects in the international application Box No. VII Certain defects in the international application Box No. VIII Certain observations on the international application Box No. VIII Certain observations on the international application Box No. VIII Certain observations on the international application Box No. VIII Certain observations on the international application Box No. VIII Certain observations on the international application Box No. VIII Certain observations on the international Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority ("IPEA") except that this does not apply where the applicant is invited to submit to the IPEA as written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 before the expiration of 22 months from the priority date, whichever expires later.  For further details, see notes to Form PCT/ISA/220.  Name and mailing address of the ISA/KR Korean Intellectual Property Office 920 Dunsan-dong, See-gu, Daejeon 28 OCTOBER 2005 (28.10.2005)  Date						(PCT Rule 43bis.1)				
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PCT/KR2005/002368   21 JULY 2005 (21.07.2005)   17 DECEMBER 2004 (17.12.2004)										
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# WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/KR2005/002368

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International application No. PCT/KR2005/002368

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Statement Novelty (N)	Claims 1-39	YES
	Claims NONE	NO
Inventive step (IS)	Claims NONE	YES
myoni, o nop (se)	Claims 1-39	NO
Industrial applicability (IA)	Claims 1-39	YES
	Claims NONE	NO

#### 2. Citations and explanations:

Reference is made to the following document:

D1: JP 08-008463 A D2: JP2004-311791A D3: JP10-012927A

#### 1. Novelty

The claims 1-39 of the present invention seem to be novel(Article 33(2) PCT) because the subject matter of the present claims 1-39 differs from an LED package in D1, D2, D3 respectively.

#### II Inventive step

The present invention relates to an apparatus for an LED package for improving heatdissipating capability and controlling light-emission easily including a metal PCB.

#### Claims 1-18

The subject matter of claims 1-18 relate to a LED package, wherein LED chip is mounted on a insulating layer-open space of a metal base with heat sink and then is connected to circuit layer by wire bonding.

D1(JP 08-008463 A) relates to a thin type LED dot matrix unit enabling to achieve high definition and to improving the heat radiating efficiency of LED chips, which are respectively fixed to a first metallic layer in the through holes of a insulating substrate and then are connected to a circuit layers provided on the front side of the insulating substrate by metallic fine wires

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## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/KR2005/002368

#### Supplemental Box

In case the space in any of the preceding boxes is not sufficient. Continuation of:

-continued from Box V

D2(JP2004-311791A) relates to lighting device including a LED element for dissipating heat efficiently from an LED chip to a heat dissipating element through a simple arrangement. The LED chip is bonded to a wiring pattern on the shallow recess of a substrate with heat sink by a connecting wire. A heat dissipating element is bonded directly to the surface of the ceramic substrate 21 on the side opposite to the light emitting surface side.

In the view of the teachings of citations D1, D2 taken in combination, these citations disclose all the features of the present claims 1–18, 20. The combination of D1 and D2 discloses the fact that LED chip is mounted on a insulating layer-open space of a metal base with heat sink and then is connected to circuit layer by wire bonding in LED package. Therefore, the present claims 1–18 do not involve an inventive step in the sense of Article 33(3) PCT.

#### Claims 19-39

The subject-matter of the present claims 19-39 relate to a LED package, wherein LED chip is mounted on a recess space of a metal base with heat sink and then is connected to circuit layer by wire bonding.

D3(JP10-012927A) relates to LED device for dissipating heat efficiently. LED chips are mounted on a recess of a metal base board wherein each chip is applied with a corresponding lens mold thus constituting an LED emitter.

D2 relates to LED device for dissipating heat efficiently, which includes LED chips mounted on a recess of a substrate with a heat sink.

In the view of the teachings of citations D3, D2 taken in combination, these citations disclose all the features of the present claims 19, 21–39. The combination of D3 and D2 discloses the fact that LED chip is mounted on a recess space of a metal base and then is connected to circuit layer by wire bonding in LED package. Therefore, the present claims 19–39 do not involve an inventive step in the sense of Article 33(3) PCT.

III Industrial applicability  The industrial applicability of the present claim 1-39 is self-evident in the sense of Article 33(4) PCT.
The end